JOURNAL OF APPLIED BEHAVIOR ANALYSIS 1998, **31,** 399–415 NUMBER 3 (FALL 1998)

TEACHING ELEMENTARY STUDENTS WITH DEVELOPMENTAL DISABILITIES TO RECRUIT TEACHER ATTENTION IN A GENERAL EDUCATION CLASSROOM: EFFECTS ON TEACHER PRAISE AND ACADEMIC PRODUCTIVITY

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Four fourth graders with developmental disabilities were trained to recruit teacher attention while they worked on spelling assignments in a general education classroom. The students were taught to show their work to the teacher two to three times per session and to make statements such as, "How am I doing?" or "Look, I'm all finished!" Training was conducted in the special education classroom and consisted of modeling, role playing, error correction, and praise. A multiple baseline across students design showed that recruitment training increased (a) the frequency of students' recruiting, (b) the frequency of teacher praise received by the students, (c) the percentage of worksheet items completed, and (d) the accuracy with which the students completed the spelling assignments.

DESCRIPTORS: developmental disabilities, generalization, inclusion, recruitment of teacher praise, special education

The systematic application of contingent praise and attention may be the most powerful motivational and behavior management tool available to classroom teachers. Among the earliest published research in applied behavior analysis were studies showing that contingent teacher praise and attention produced reliable and significant improvements in children's behavior in elementary classrooms (Madsen, Becker, & Thomas, 1968), secondary classrooms (McAllister, Stachowiak, Baer, & Conderman, 1969), and special education classrooms (Zimmerman & Zimmerman, 1962). Other early studies showed that contingent teacher attention and praise could increase students' study behavior (Hall, Lund, & Jackson, 1968) and improve their academic achievement (Hasazi & Hasazi, 1972).

More recent research has shown the positive effects of contingent praise on a wide range of learners, including infants (e.g., Poulson & Kymissis, 1988), preschoolers (e.g., Connell, Randall, Wilson, Lutz, & Lamb, 1993; Fox, Shores, Lindeman, & Strain, 1986), elementary school students

This report is based on a thesis submitted by the first author in partial fulfillment of the requirements for the Master of Arts degree at The Ohio State University. We thank the participating classroom teacher and her students for their involvement in this study and Patricia Wolford for serving as a reliable and competent observer.

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(e.g., Martens, Lochner, & Kelly, 1992; McGee, Krantz, Mason, & McClannahan, 1983; Mudre & McCormick, 1989; van der Mars, 1989), adolescents (e.g., Martella, Marchand-Martella, Young, & MacFarlane, 1995; Staub, 1990; Wolery, Cybriwski, Gast, & Boyle-Gast, 1991), and adults (e.g., Cossairt, Hall, & Hopkins, 1973; Haseltine & Miltenberger, 1990).

Although the positive effects of teacher praise have been known for a long time (Gilchrist, 1916), descriptive studies of teacher praise rates have reported disappointing results. For example, White (1975) summarized the results of 16 observational studies of the rates of teacher verbal approval and disapproval by 104 teachers in Grades 1 through 12. Rates of teacher verbal approval dropped with each grade level, with a marked decline of teacher approval after second grade. In addition, the rates at which teachers expressed verbal disapproval toward students exceeded their rates of verbal approval from Grade 3 upward. Low rates of teacher praise have also been documented by Baker and Zigmond (1990); Deno, Maruyama, Espin, and Cohen (1990); Gable, Hendrickson, Young, Shores, and Stowitschek (1983); Nowacek, McKinney, and Hallahan (1990); and Ysseldyke, Thurlow, Mecklenburg, and Graden (1984).

The typical classroom is an extremely busy place, an environment in which important efforts by students can easily go unnoticed. When teachers do not notice students' desired academic and social behaviors, those behaviors cannot be praised. In such instances an existing and potentially effective reinforcement contingency is "asleep" and needs to be "waked up" (Stokes, Fowler, & Baer, 1978). Teaching students to appropriately recruit teacher attention is one strategy by which a sometimes dormant but powerful contingency of reinforcement can be activated. For example, Stokes et al. taught typically developing preschoolers to evaluate the quality of their academic work (paper-and-pencil writing tasks such as tracing lines and letters) and to recruit their teachers' attention by raising their hands and making statements such as, "Have I been working carefully?" or "How is this?" The children used these skills successfully with teachers who were unaware of the study's purpose, and approximately 90% of the children's cues were followed by teacher praise within 20 s of a recruiting response.

Other studies have reported increased recruiting responses and teacher praise statements with preschoolers with developmental delays learning to stay on task during transitions (Connell, Carta, & Baer, 1993); elementary students performing academic tasks (Hrydowy, Stokes, & Martin, 1984; Morgan, Young, & Goldstein, 1983); elementary-age boys with autism completing leisure, self-care, or language activities (Harchik, Harchik, Luce, & Sherman, 1990); adolescent girls in a maximum security institution learning to work more productively in a vocational training program (Seymour & Stokes, 1976); and secondary students with mental retardation learning to work more productively in a vocational training setting (Mank & Horner, 1987).

Although previous recruitment studies with elementary students found increased recruiting and increased teacher praise (Hrydowy et al., 1984; Morgan et al., 1983), we could find no published data on the effects of recruiting on the academic tasks for which the students were taught to recruit their teachers' attention. Although evidence that student recruiting results in increased teacher praise is important, academic productivity in a classroom recruiting study is an essential dependent variable because the ultimate purpose of training students to recruit teacher praise is to maintain and extend the targeted academic or social skills for which the students are recruiting praise.

This study was designed to extend exist-

ing research by training elementary school students with developmental disabilities to recruit teacher attention in a general education classroom and by measuring the effects of recruiting on academic productivity and accuracy. Specifically, the students were taught when, how, and how often to recruit their teacher's attention in the general education classroom. The study addressed three research questions: What are the effects of training elementary students with developmental disabilities to recruit teacher attention in the special education classroom on (a) the frequency of recruiting responses emitted by the students in the general education classroom, (b) the frequency of teacher praise received by the students in the general education classroom, and (c) the students' academic productivity and accuracy while completing spelling worksheets in the general education classroom?

METHOD

Participants

Students. Student participants were 4 fourth graders with developmental disabilities who were enrolled in an urban public elementary school. The students were selected for this study by their special education teacher because they were unproductive during independent seat-work time, rarely asked for teacher help, and performed below grade level in the general education classroom. Each student received individualized instruction in a special education resource room and was mainstreamed in a general education classroom for 45 to 90 min per day. In addition, each student's individualized education plan (IEP) included goals that specified increased socialization and participation.

Each student's school folder included IQ and adaptive behavior test (Vineland Adaptive Behavior Scale) scores from special education placement or reevaluation assessments conducted within the previous 3 years and grade-equivalent scores on the reading and spelling subtests of the Brigance Inventory of Basic Skills administered at the beginning of the school year. Latasha was a 10-year-old girl with a full-scale IQ score of 58 (Wechsler Intelligence Scale for Children–Revised; WISC-R), adaptive behavior score of 63, and Grade 2 reading and spelling scores. Olivia was an 11-year-old girl with a full-scale IQ score of 70 (Stanford-Binet), adaptive behavior score of 57, and Grade 2 reading and spelling scores. Octavian was an 11-year-old boy with a full-scale IQ score of 67 (Stanford-Binet), adaptive behavior score of 57, and Grade K reading and spelling scores. Kenny was an 11-year-old boy with a full-scale IQ score of 53 (WISC-R), adaptive behavior score of 53, and Grade K reading and spelling scores.

General education teacher. The general education teacher taught reading, language arts, math, social studies, science, and health to fourth graders. Several students with disabilities were included in her classroom during homeroom, social studies, science, and health periods. At the time of this experiment, the general education teacher had 29 years of teaching experience. The target students and the general education teacher were observed during homeroom period when all students in the classroom were expected to complete independent academic assignments.

Special education teacher. The special education teacher (the first author) had 4 years of experience teaching elementary students with developmental disabilities. The special education teacher trained the target students to recruit positive attention from the general education teacher.

Settings

The study was conducted in two classrooms: the special education classroom, in which students were trained to recruit teacher attention, and the general education class-

room, in which data on student recruiting behaviors and teacher praise were collected. Each student was taught individually to recruit in the special education classroom when no other students were present. In the general education classroom, which was located across the hall from the special education classroom, students worked at tables in groups of 4 to 6. Each morning the special education students attended homeroom in the general education classroom for 30 min. During this time they were expected to complete spelling worksheets assigned and provided by the special education teacher.

The typical and expected procedure for obtaining teacher assistance during homeroom in the general education classroom was for students to walk to the teacher's desk and, if other students were at the desk, to wait in line before asking for help. When the teacher was not at her desk, students were expected to raise their hands and wait to be recognized.

Dependent Variables

Student recruiting. A recruiting response was recorded each time a student emitted all three of the following steps in sequence: (a) walked to the teacher's desk (or raised his or her hand), (b) waited quietly until the teacher recognized him or her (e.g., "Latasha, what can I help you with?"), and (c) voiced a statement or question to the teacher about his or her academic work (e.g., "How am I doing?" "Is this right?" "I don't understand this." "Can you help me?" "Did I do a good job?" "What do I do next?" "Can you read this please?" "Look, I'm all finished!").

A recruiting response was not recorded if a student spoke in a whiny tone of voice; spoke too quietly to be heard clearly; spoke loud enough to be disruptive to the class or yelled across the room to the teacher; signaled nonverbally (e.g., pointed to his or her work); or interrupted the teacher when she was involved in classroom duties (e.g., lunch count, attendance), speaking with or helping another student, or speaking to a visitor in the classroom. A recruiting response was not recorded if a student asked the teacher for nonacademic assistance (e.g., asked to sharpen his or her pencil, asked to go to the bathroom, complained about another student, inquired about field trip information).

Teacher praise. Praise was recorded each time the teacher made any statement to 1 of the 4 students that expressed approval about the student's academic work. Examples of praise included, but were not limited to, "That looks good." "Great work!" "I like the way you wrote neatly." "Wow, you finished quickly." "Everything is correct." "You are working very quietly." and "Wonderful!" When the teacher emitted multiple praise statements during a single recruiting episode, only one praise statement was recorded. Praise was not recorded when the teacher praised the whole class or several students at a time (e.g., "Group one is working so quietly."). Each instance of teacher praise was recorded as recruited (initiated by the student) or nonrecruited (initiated by the teacher). If the teacher provided assistance but did not praise the student, the observers recorded this interaction as "other attention."

Completion of academic work. Spelling was selected as the academic focus for this study for two reasons: (a) All of the other nondisabled students worked on in-seat spelling assignments during the 30-min homeroom period, and (b) each student's IEP included spelling objectives. The special education teacher gave each of the 4 students an individualized list of 10 new spelling words each week. The students were expected to bring their lists to homeroom class each day. Each day during the study, the special education teacher gave the 4 students an individualized spelling worksheet that required them to do one or more of the following activities with their weekly spelling words:

(a) alphabetize words; (b) write the number of syllables in each word; (c) identify and mark consonants and vowels; (d) locate words in the dictionary and write the forms, page numbers, or guide words; or (e) write the correct sequence of letters in scrambled spelling words. The special education teacher held the difficulty level of the spelling assignments constant by selecting the same types of worksheets throughout the study.

The spelling worksheets were placed on the students' desks in the general education classroom before they arrived to homeroom class each morning. Each worksheet contained 10 to 16 items, each item requiring one or more written responses. An item was counted as completed if more than 50% of the answer was written. For example, if the correct response to an item required spelling the word "l-e-t-t-e-r-s" and the student wrote "l-e-t-t-s," that item was scored as completed. A greater than 50% criterion for considering an item completed was selected because students would sometimes write just one or two letters of a spelling word. However, when a student wrote more than half of the letters in a word, it was assumed that the student considered the item completed and the answer was then scored for accuracy. Worksheet completion was calculated as a percentage by dividing the number of completed items by the total number of worksheet items and multiplying by 100%.

Accuracy of academic work. The special education teacher used an answer key to score the accuracy of each student's spelling assignments. Accuracy percentage was calculated by dividing the number of correct answers by the total number of items completed and multiplying by 100%.

Observation Procedures

The primary observer (second author) and secondary observer used a paper-and-pencil data sheet to record a frequency count of student recruiting responses and teacher praise statements in the general education classroom for 20 min per school day, 4 days per week (Tuesday through Friday, 9:10 a.m. to 9:30 a.m.). Each day for 2 weeks prior to the first baseline session, one or both observers were present in the general education classroom. The observers were never in the special education classroom in the presence of the students, nor did observers have any contact with the special education teacher in the presence of the students.

Procedures to Assess and Increase the Believability of Data

Student recruiting and teacher praise. A second observer was present for 12 (30%) of the study's 40 sessions. The two observers independently and simultaneously observed the 4 students, recording the number of recruiting responses they emitted and teacher praise they received. Descriptive narrative notes recorded by the observers enabled each recruiting episode to be identified for agreement purposes. Interobserver agreement was calculated on an episode-by-episode basis by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100%. Agreement for frequency of student recruiting ranged across students from 88.2% to 100%; agreement for frequency of recruited teacher praise was 100% for all 4 students; agreement for frequency of nonrecruited teacher praise ranged from 93.3% to 100%.

Academic work completion and accuracy. A second observer independently recorded each student's work completion and accuracy for 10 (25%) sessions. Interobserver agreement for both completion and accuracy on the spelling worksheets was 100% for all 4 students.

Teacher knowledge. Before data collection began, the special education teacher told the general education teacher that the observers would be in her classroom to record the independent work habits of the mainstreamed

special education students. The special education teacher also explained that the mainstreamed students should not be made aware of any relationship between the observers and the special education teacher because the data on their work habits might not be valid if the students realized they were being observed.

Student knowledge. The general education teacher told the students in her class the observers were her guests who would be in the classroom to observe and learn about classroom procedures. Recruitment training for each student began within 4 to 8 weeks after the observers had been in the general education classroom; thus, it was unlikely the students correlated the training with the presence of the observers.

Experimental Design

A multiple baseline across students design was used to analyze the effects of recruitment training on the frequency of student recruiting, teacher praise, and academic work productivity in the general education classroom.

Baseline

Students were observed in the general education homeroom classroom for a 20-min period while working independently on their assigned spelling worksheets. Throughout the study, the students returned to the special education resource room after homeroom period. When the students entered the resource room, they gave their spelling worksheets to the special education teacher.

Recruitment Training

Individual recruitment training for each target student was conducted in the special education classroom over 2 consecutive days during a portion of the homeroom period (9:00 to 9:20 a.m.). Training consisted of three parts: (a) instruction and role playing, (b) morning prompts, and (c) end-of-the-school-day check and reward.

Instruction and role playing. At the beginning of the first training session, the special education teacher explained that she would be teaching the students how to get their regular classroom teacher to look at their work. The special education teacher prompted and guided student responses to questions about why recruiting teacher attention would be helpful (e.g., getting extra help on assignments, obtaining feedback on accuracy, getting more work done, getting better grades, feeling "good" or "happy" when the teacher says she likes your work).

After providing the rationale for recruiting teacher help, the special education teacher told the students when to ask for help, how to ask for help, and how often to ask for help. The special education teacher then modeled the procedure using a "think aloud" technique (e.g., "OK, I've finished half of my work. Now I'll look to see if the teacher is free. She's not busy. So I'll raise my hand."). The special education teacher and students then practiced several recruiting episodes through role playing.

The special education teacher told the students that the appropriate times to approach the teacher for help and feedback were when the worksheet was about 50% completed and again when the worksheet was 100% complete. The students were also told they could seek the teacher's help before starting the worksheet if they did not understand the assignment. The students were then shown several examples of worksheets in various stages of completeness and asked to identify whether it was time to recruit and, if not, how much more work should be completed before recruiting the teacher's attention. The students were also instructed to ask for help only when the teacher was available. The special education teacher and students then generated examples of appropriate times to recruit (e.g., when the teacher

is not talking to a parent, not taking lunch count, not helping another student, not busy with attendance).

Appropriate ways to recruit teacher attention were then described and modeled. The students were told that in most classrooms they should raise their hand and wait quietly for the teacher to recognize them. But if the teacher was at her desk during homeroom, they should bring their work to the teacher's desk, wait to be recognized, and then politely ask or say something about their work. The special education teacher and students then generated examples of appropriate recruiting statements (e.g., "How am I doing?" "Is this right?" "Can you tell me if this is right?" "Is this correct?" "Look, I've finished my work." or "Did I do a good job?"). Finally, the students were told to recruit at least twice, but not more than three times, during the seat-work period in homeroom. The first training session ended with the teacher and student role playing several recruiting episodes.

During the second day of training, the special education teacher and students reviewed the rationale for recruiting and procedures for when, how, and how often to recruit. Then they role played the recruiting procedure several times with the special education teacher responding in various ways to the students' recruiting efforts (e.g., providing praise, ignoring the students, telling them to wait or to come back later).

Morning prompts. Before entering the general education classroom for morning homeroom, each student was reminded by the special education teacher to recruit at least twice, but not more than three times, during homeroom period. At this time, the special education teacher (a) drew three small boxes at the top of the student's spelling worksheet, (b) instructed the student to check one of the boxes each time he or she recruited, and (c) told the student to stop recruiting for that assignment when all the boxes were checked.

End-of-the-school-day check and reward. At the end of the school day, the special education teacher asked the students how many times they appropriately recruited during seat-work time in homeroom that morning. If the students stated that they did not recruit, the special education teacher prompted them to do so the following day. If the students reported recruiting once, the special education teacher praised the students and prompted them to try to recruit two times the next day. If the students reported recruiting two or three times, the special education teacher let the students select an inexpensive prize (e.g., sticker, pencil) from a prize box that was part of a reward system that had been operating in the resource room prior to the study. Students' self-reports were consistent with the observers' data.

Generalization Programming

Continuous reinforcement. The morning prompting procedure was continued during the initial part of the generalization programming phase. When students reported recruiting at least twice at the end-of-the-school-day check and reward, they were allowed to select a card from a brown paper bag that contained four cards. Whenever students selected a card with "Box pick" printed on it, they were allowed to select an item from the class prize box. During the continuous reinforcement part of the generalization programming phase, all four cards were "Box pick" cards.

Intermittent reinforcement. When students recruited at least twice for five consecutive sessions, an intermittent schedule of reinforcement was implemented. "Box pick" was printed on only two of the four cards, and a praise statement (e.g., "Great job!" "Keep it up!") was printed on the other two cards. The students then drew a card at the end of

the day to determine when they could select a prize. This phase was not implemented with Kenny because of absences.

Maintenance

The morning prompt to recruit and the end-of-the-school-day check and reward meeting were terminated in the maintenance condition. If a student independently reported recruiting or completing all of his or her spelling assignment, however, the special education teacher delivered praise.

RESULTS

Student Recruiting

The number of recruiting responses emitted per session by each student is shown in Figure 1. Three of the 4 students seldom, if ever, recruited teacher attention prior to training: Latasha, two times in 6 baseline sessions; Olivia never recruited during 14 sessions; and Octavian, three times in 16 sessions. Although Kenny recruited at a fairly steady rate during baseline, a total of 22 times in 26 sessions, he recruited at the targeted frequency of two or three times on only four (15%) baseline sessions.

All 4 students recruited at the target frequency of two or three times per session for the majority of sessions during the combined generalization programming and maintenance phases: Latasha, 17 (71%) of 24 sessions; Olivia, 11 (61%) of 18 sessions; Octavian, nine (56%) of 16 sessions; Kenny, four (57%) of seven sessions.

The 4 students emitted the following mean number of recruiting responses per session during baseline and the combined generalization programming and maintenance phases: Latasha, 0.3 and 2.1; Olivia, 0.0 and 2.1; Octavian, 0.2 and 1.6; Kenny, 0.8 and 2.0 (see Figure 2).

Teacher Praise

The number of teacher praise statements received per session by each student is also shown in Figure 1. During baseline, no instances of teacher praise, either recruited or nonrecruited, were recorded for Latasha, Olivia, or Octavian. Kenny received eight praise statements over 26 baseline sessions, one instance of which was nonrecruited. The mean number of praise statements per session received by each student during baseline and the combined generalization programming and maintenance phases were, for Latasha, 0.0 and 2.1; for Olivia, 0.0 and 2.1; for Octavian, 0.0 and 1.6; and for Kenny, 0.8 and 2.0 (Figure 2).

The 4 students' recruiting responses were successful in producing teacher praise at the following ratios: Latasha, 39 (78%) of 50 recruiting responses; Olivia, 20 (53%) of 38; Octavian, 12 (46%) of 26; and Kenny, 10 (77%) of 13. All 81 instances of teacher praise recorded during the combined generalization programming and maintenance phases were recruited by the students.

Completion and Accuracy of Academic Work

Figure 3 shows the percentage of spelling worksheet items completed and percentage accuracy of completed items by each student. All 4 students' worksheet completion and accuracy were higher during the combined generalization programming and maintenance phases than during baseline. The most dramatic changes occurred for Olivia and Octavian. On nine of 16 generalization and maintenance phase sessions, Olivia completed all of her worksheet items with 100% accuracy; in baseline she achieved that level of performance on just three of 14 sessions. Octavian completed 40% or more of his worksheet on 10 of 14 posttraining sessions; while in baseline, he completed 0% of his work on 10 of 16 sessions and reached 40% completion on one session.

The mean percentages of spelling worksheet completion and accuracy by each stu-

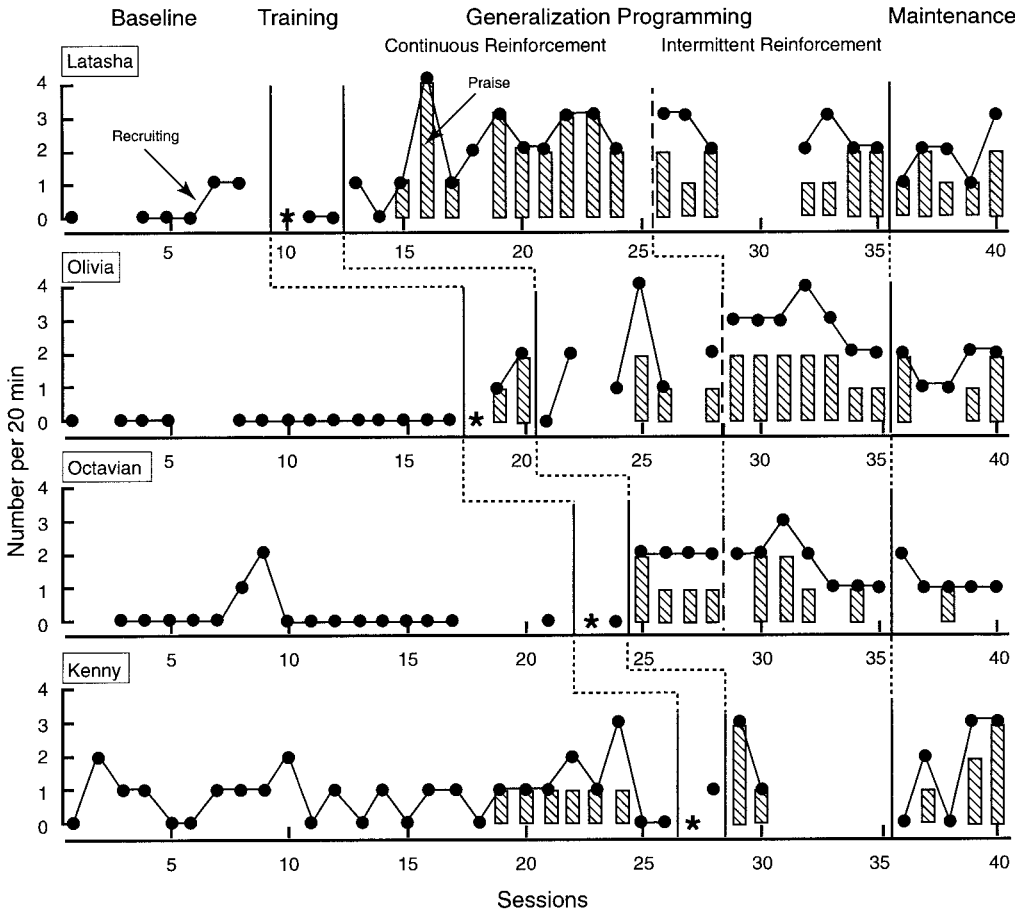

Figure 1. Frequency of student recruiting responses (data points) and teacher praise statements (bars) during 20-min seat-work sessions. Target recruiting rate was two to three responses per session. Asterisks show when each student received training in the special education resource room.

dent during baseline and the combined generalization programming and maintenance phases are shown in Figure 4. The students achieved the following increases in mean percentage of worksheet completion from baseline to the combined generalization programming and maintenance phases: Latasha, 60% to 79%; Olivia, 53% to 95%; Octavian, 8% to 72%; and Kenny, 59% to 75%. The students' mean levels of worksheet accuracy of completed items before and after recruitment training were, for Latasha, 67% and 77%; for Olivia, 56% and 99%; for Octavian, 25% and 56%; and for Kenny, 59% and 65%.

Participants' Opinions

The general education teacher's and the students' opinions of the study's procedures and results were obtained via interviews conducted at the beginning of the next school year following the summer vacation after the study.

General education teacher's opinions. The primary data collector conducted the interview with the general education teacher. Before explaining the study's rationale and procedures, she asked whether the teacher had noticed any differences in the classroom behavior of the 4 target students. The teacher stated that the students asked her for help much more frequently and that they seemed

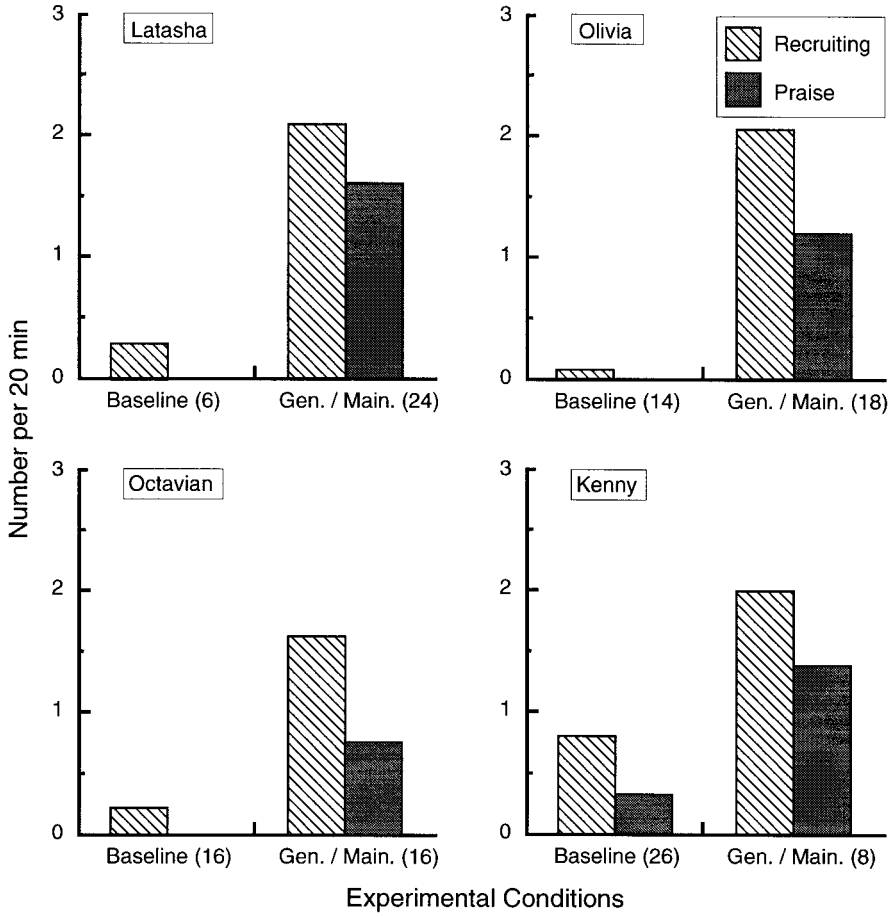

Figure 2. Mean number of recruiting responses and teacher praise statements during baseline and combined generalization programming and maintenance conditions. Numbers in parentheses show total number of sessions per condition. With the exception of one nonrecruited praise statement included in Kenny's data, all instances of teacher praise were recruited.

more interested in getting their work done. She also stated that she thought the experimenters were trying to get the students to ask her for help.

After the teacher was told the details of the experiment, she commented that the students recruited an appropriate number of times and that they did so at about the same frequency as other students in the class who sought her help or attention. She indicated that the students' recruiting efforts seemed natural and that they seemed to appreciate the extra help ("They were very polite."). The teacher said the only time the recruiting seemed unnatural was on one or two occasions when a student stopped to recruit on his or her way out the classroom door while leaving for another class. The general education teacher stated that the students were much more productive and "felt a sense of accomplishment first thing in the morning which set the tone for the rest of the day."

When asked to comment whether the recruitment training affected the students' social skills, the teacher stated, "They fit in better, they were more a part of the group, and they weren't being disruptive because they were working." The teacher commented that the students were not recruiting nearly as much in the new school year as

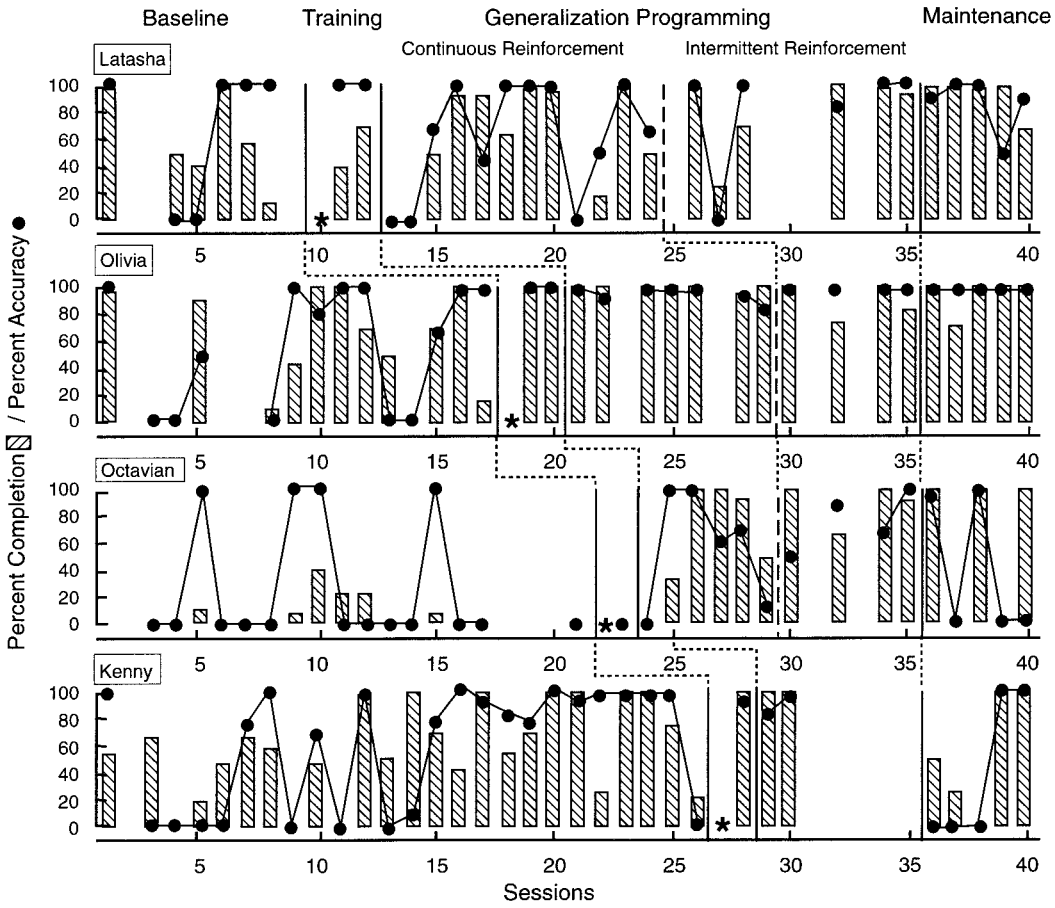

Figure 3. Percentage of spelling worksheet items completed (bars) and percentage accuracy of completed items (data points) during 20-min seat-work sessions. Asterisks show when each student received training in the special education resource room.

they had the previous spring, but they were working more independently and staying on task more than before. The interviewer then showed the teacher the graphs from the study and pointed out the increased frequency with which the teacher praised the students after they had been taught to recruit her attention. The teacher said, "Well, they're not going to get praised unless they show me their work."

Students' opinions. The students were interviewed individually by the special education teacher. Each student remembered the recruiting procedure and was able to restate the steps. All 4 students stated that they got more work done when they were recruiting and that they felt "good" or "happy" when the regular classroom teacher praised them. Octavian said he liked recruiting "because Mrs. B— was nice when we go up there and ask her. . . . When we did a really good job, she would give us a sticker." When asked if they still recruited, 3 of the students said they still did, but not as often: "Yes, sometimes. Not every day," "A little bit," and "Some days." Octavian said, "No, I forgot all about it."

DISCUSSION

Student Recruiting

The results of this study support and extend the findings of previous research show-

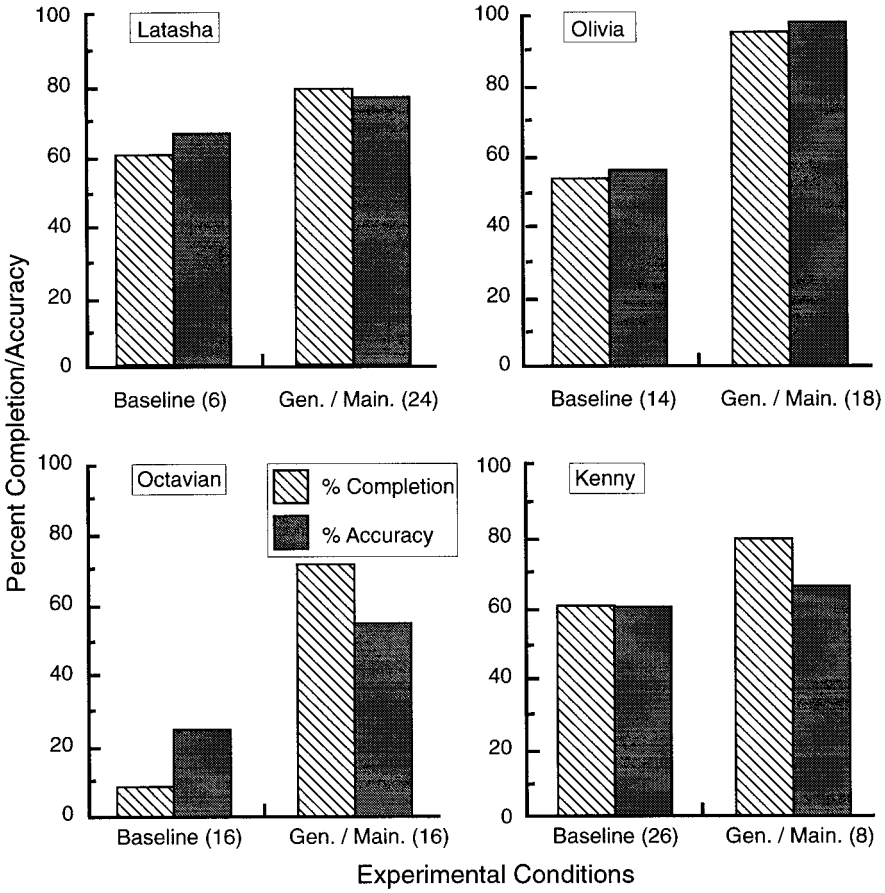

Figure 4. Mean percentage of spelling worksheet items completed and mean percentage accuracy by each student during baseline and combined generalization programming and maintenance conditions. Numbers in parentheses show total number of sessions per condition.

ing that children with developmental disabilities can be taught to recruit attention from teachers or other adults (Connell, Carta, & Baer, 1993; Harchik et al., 1990; Hrydowy et al., 1984; Mank & Horner, 1987; Morgan et al., 1983; Seymour & Stokes, 1976; Stokes et al., 1978). The results are especially significant for 3 of the 4 students: Latasha, who recruited only twice in six baseline sessions, recruited at least once during 23 of 24 posttraining sessions; Olivia, who never recruited during 14 sessions prior to training, recruited teacher attention on 17 of 18 sessions after training; and Octavian recruited at least once during all 16 posttraining sessions, compared to his baseline frequency of just twice in 16 sessions. Because he recruited with some consistency during baseline, Kenny was the last student to receive training. Unfortunately, because Kenny missed more than a week of school during the generalization programming phase due to chicken pox, there was no opportunity to determine whether his recruiting would have increased to the targeted rate.

Teacher Praise

Training students to recruit teacher attention increased the frequency of teacher praise received by all 4 students, a finding consistent with the previously cited research on

recruiting adult attention. Again, the results were most striking for Latasha, Olivia, and Octavian. Not one teacher praise statement was delivered to these 3 students over a combined 36 baseline sessions (representing a cumulative total of 12 hr of independent seat work). After training, however, Latasha received at least one instance of teacher praise from the fourth grade teacher in 22 (92%) of 24 sessions, Olivia was praised in 13 (72%) of 18 sessions, and Octavian was praised on nine (56%) of 16 sessions.

Approximately four of every five recruiting responses by Kenny and Latasha were followed by teacher praise, and one in two recruiting efforts by Olivia and Octavian produced praise. (Only one of Octavian's six recruiting responses produced praise during the maintenance phase, possibly because he forgot to bring his list of spelling words to the regular classroom on 2 of the last 4 days of the study and therefore was unable to complete his work.) However, students' recruiting responses that did not result in praise from the teacher usually evoked instructional feedback (e.g., "Number 3 isn't correct, check it again and see what you did wrong.") The finding that not every incidence of recruiting results in teacher praise is consistent with data reported by Connell, Carta, and Baer (1993) and Harchik et al. (1990). It is possible that the recruiting responses of the students were maintained and strengthened by an intermittent schedule of teacher praise.

Similar to Connell, Carta, and Baer's (1993) findings, the teacher in this study reported that she thought more highly of the students when they recruited her attention. The students also indicated that they liked recruiting, enjoyed the positive teacher comments, and felt as if they were getting more work done.

Academic Productivity

Previous studies in which elementary students were taught to recruit for academic tasks reported increased recruiting (Morgan et al., 1983) and increased teacher praise (Hrydowy et al., 1984). Although increased student recruiting and teacher praise are important findings, the results are limited without improvement in target skills for which the students are recruiting praise. This is the first study to measure the effects of recruiting praise on academic performance by elementary school students. After recruitment training, the worksheet completion and accuracy of all 4 students increased over baseline levels, providing some support for a functional relationship between recruitment training and increased academic productivity. These results are similar to those reported by Mank and Horner (1987) and Seymour and Stokes (1976), whose participants showed increased performance on vocational tasks after they began recruiting adult attention and feedback.

Academic productivity results were most notable for Olivia and Octavian. After recruitment training, Olivia's performance completion and accuracy increased from means of below 60% to above 90%, and Octavian's completion and accuracy increased from means of below 30% to above 55%. Although the improvements for Latasha and Kenny were more modest, they represent an increase of one letter grade in spelling, a commendable achievement for many elementary school students.

Implications for Classroom Practice

Because classrooms are such busy environments, even the most diligent and hard-working teachers sometimes miss opportunities to praise and provide feedback for desired student behaviors. Training students to recruit teacher attention can be a relatively low-cost, low-effort strategy—in this study, two 20-min training sessions were needed with each student—for increasing a student's contact with an important and powerful source of reinforcement in the classroom.

Recruitment training will be effective in the long term only if students exhibit behaviors likely to be praised by teachers (e.g., producing accurate work). Thus, the strategy has a greater likelihood of success if students are given materials and tasks at their instructional level (Mercer, 1997).

It is important to determine the forms and rates of recruiting most likely to be successful in the targeted environment. Whenever possible, observation and assessment of teachers' instructional routines and expectations in the specific classroom in which students will be recruiting should be conducted prior to training. For example, although students in most classrooms get their teacher's attention by raising their hands, students in this study were expected to go to the teacher's desk to recruit her attention. When observation and consultation with the adults in the targeted settings are not possible, training should provide students with a repertoire of several recruiting routines in an effort to prepare them to recruit effectively in a variety of activities and settings (Alber & Heward, 1997). In addition, acceptable recruiting rates should be determined for each generalization setting to guard against creating "pests" who seek teacher attention too frequently (Stokes et al., 1978).

Effective recruitment training will also prepare students for the fact that not every recruiting response will evoke teacher praise (Alber & Heward, 1997). Recruitment training should include systematic role playing of the full range of possible teacher reactions to students' recruiting (e.g., ignoring, criticizing the student's work) so that students learn proper ways to respond to such instances (Horner, Sprague, & Wilcox, 1982).

Limitations and Future Research

In this study, students recruited the attention of one teacher, in one classroom, during a single, clearly prescribed activity. For recruitment training to produce the greatest possible benefits—that is, to help students contact as many available but dormant natural contingencies of reinforcement as possible—their newly learned recruiting skills must generalize to a wide range of relevant settings and significant adults (Horner, Dunlap, & Koegel, 1988).

Peer comparison data might also be valuable in future research. Data on the rates and forms with which nontargeted peers recruit teacher praise and attention in general education classrooms would provide benchmarks for evaluating the relative acceptance and normalcy of recruiting by trained students. However, practitioners and researchers must use comparison data carefully; a student with learning or behavior challenges may need to recruit more frequently than his or her nondisabled peers in order to be successful in a general education classroom (Heward, 1996).

Some middle and high school students find the approval of peers more reinforcing than adult attention. Future research might explore the effects of training students to recruit peer attention for targeted academic or social skills during cooperative learning groups, peer tutoring, or extracurricular activities. Children could also be taught to recruit social reinforcement from parents and siblings.

Verbal praise was the only measure of teacher behavior in this study. Although the positive effects of contingent teacher praise are well documented, making praise a primary focus and outcome, future research should analyze the effects of student recruiting on other teacher behaviors (e.g., frequency and type of instructional feedback, rates of verbal disapproval).

A major limitation with all of the recruiting research reported to date is the limited duration of the maintenance phases. Although it is encouraging that the students in this study continued to recruit after all

prompts and tangible rewards for recruiting were terminated, the maintenance phase lasted just five sessions because of the end of the school year. Follow-up data could not be collected during the following school year because the students were no longer included in the general education classroom during homeroom period due to a change in bus schedules. Future research will be enhanced by recruiting studies with maintenance phases that last several months or more and by probes for maintenance and generality across instructional activities, teachers, and classrooms.

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Received September 8, 1997
Initial editorial decision November 10, 1997
Final acceptance March 16, 1998
Action Editor, John M. Parrish

STUDY QUESTIONS

1. Briefly summarize results of previous research on teachers' use of praise in the classroom. How does the present study extend that research?

2. What were the dependent variables (i.e., student and teacher responses)? Although not explicitly labeled as such, which dependent variables also functioned as independent variables?

3. Describe the procedures used to train the recruitment response.

4. Describe the generalization programming procedure. From a technical standpoint, why would performance during this phase not be considered an example of generalization?

5. Briefly summarize the results of this study with respect to both student and teacher behavior.

6. In their discussion, the authors suggest that recruitment responses were maintained by the

teacher attention that was delivered as a consequence. What other features of the intervention may have contributed to the maintenance of recruitment responses?

7. What is one inadvertent problem of training students to recruit teacher help? How did the authors attempt to reduce the likelihood of this problem?

8. What are the implications of this study for the treatment and prevention of behavior problems? In this respect, what commonly used intervention did the recruitment procedures resemble?

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